

MS

391-3-17-.08

**REGULATION AND LICENSING OF NATURALLY-OCCURRING  
RADIOACTIVE MATERIALS (NORM).**

(1) Purpose

This Rule, 391-3-17-.08, establishes radiation protection standards for the possession, use, transfer, and disposal of naturally-occurring radioactive materials (NORM) not subject to regulation under the Atomic Energy Act of 1954, as amended. All numbered and lettered references within this Rule refer to parts of this Rule, unless stated otherwise.

(2) Scope

- (a) This Rule applies to any person who engages in the extraction, mining, storage, beneficiating, processing, use, transfer, or disposal of NORM in such a manner as to alter the chemical properties or physical state of the NORM or its potential exposure pathways to humans.
- (b) This Rule addresses the introduction of NORM into products in which neither the NORM nor the radiation emitted from the NORM is considered to be beneficial to the products. The manufacture and distribution of products containing NORM in which the NORM and/or its associated radiation(s) is considered to be a beneficial attribute are licensed under the provisions of Rule .02 of this Chapter.
- (c) This Rule also addresses waste management and disposal standards.

(3) Definitions

As used in this Rule, the following definitions apply:

- (a) "Beneficial attribute" or "Beneficial to the product" means that the radioactivity of the product is necessary to the use of the product.
- (b) "Beneficiating" means the processing of materials for the purpose of altering the chemical or physical properties to improve the quality, purity, or assay grade.



Rule .08(3)(c)

- (c) "General environment" means the total terrestrial, atmospheric, and aquatic environments outside sites within which any activity, operation, or process authorized by a general or specific license issued under this Rule is performed.
- (d) "Naturally-occurring radioactive material" (NORM) means any nuclide which is radioactive in its natural physical state (i.e., not man-made), but does not include byproduct, source, or special nuclear material.
- (e) "Product" means something produced, made, manufactured, refined, or benefited.
- (f) "Recycling" means a process by which materials that have served their intended use are collected, separated, or processed and returned to use in the form of raw materials in the production of new products. Recycling shall not include the use of a material in a manner that constitutes disposal in accordance with Rule .03(12).
- (g) "Technologically-enhanced" means the chemical properties or physical state of natural sources of radiation have been altered or the potential exposure pathways of natural sources of radiation to humans have been altered.
- (h) "Working Level" (WL) means any combination of short-lived radon decay products in one liter of air that will result in the ultimate emission of alpha particles with a total energy of 130 billion electron volts ( $2.1 \times 10^{-8} \text{ J}$ ).

(4) Exemptions

- (a) Persons who receive, possess, use, process, store, transfer, commercially distribute, or dispose of NORM are exempt from the requirements of this Chapter if the materials contain or are contaminated by concentrations of:
  - 1. Either:
    - (i) 30 picocuries (1.1 Bq) per gram or less of technologically-enhanced radium-226 or radium-228 in soil, averaged over any 100 square meters and averaged over the first 15 centimeters of soil below the surface, provided that the radon emanation rate is less than 20 pCi (.74 Bq) per square meter per second, or

Rule .08(4)(a)1.(ii)

- (ii) 30 pCi (1.11Bq) per gram or less of technologically-enhanced radium-226 or radium-228 in media other than soil, provided that the radon emanation rate is less than 20 pCi (.74 Bq) per square meter per second;
- 2. Either:
  - (i) 5 pCi (.185 Bq) per gram or less of technologically-enhanced radium-226 or radium-228 in soil, averaged over any 100 square meters and averaged over the first 15 centimeters of soil below the surface, in which the radon emanation rate is equal to or greater than 20 pCi (.74 Bq) per square meter per second, or
  - (ii) 5 pCi (.185 Bq) per gram or less of technologically-enhanced radium-226 or radium-228 in media other than soil, in which the radon emanation rate is equal to or greater than 20 pCi (.74 Bq) per square meter per second; or
- 3. Either:
  - (i) 150 pCi (5.55 Bq) or less per gram of any other NORM radionuclide in soil, averaged over any 100 square meters and averaged over the first 15 centimeters of soil below the surface, provided that these concentrations are not exceeded at any time, or
  - (ii) 150 pCi (5.55 Bq) or less per gram of any other NORM radionuclide in media other than soil, provided that these concentrations are not exceeded at any time.
- (b) Persons who receive products or materials containing NORM distributed in accordance with a specific license issued by the Department pursuant to (12)(c) or an equivalent license issued by another Licensing State are exempt from this Chapter.
- (c) The manufacturing, commercial distribution, use, and disposal of the following products/materials are exempt from the requirements of this Chapter:
  - 1. Potassium and potassium compounds which have not been isotopically enriched in the radionuclide K-40;
  - 2. Brazil nuts; and

Rule .08(4)(c)3.

3. Byproducts from fossil fuel combustion (bottom ash, fly ash, and flue-gas emission control byproducts);
  4. Materials used for building and highway construction, industrial processes, sand blasting, metal casings, or other material containing NORM, in which the radionuclide content has not been concentrated to levels higher than found in its natural state.
- (d) The wholesale and retail distribution (including custom blending), possession, and use of the following products/materials are exempt from the requirements of this Chapter:
1. Phosphate and potash fertilizer;
  2. Phosphogypsum for agricultural uses; and
  3. Materials used for building and highway construction, industrial processes, sand blasting, metal casings, or other material containing NORM, in which the radionuclide content has not been concentrated to levels higher than found in its natural state.
- (e) The possession, storage, transportation, commercial distribution, and use of natural gas and natural gas products and crude oil and crude oil products as a fuel are exempt from the requirements of this Chapter. The distribution of natural gas and crude oil and the manufacturing and distribution of natural gas and crude oil products are exempt from the specific license requirements of this Rule but are subject to the general license requirements in (7), (8), and (9).
- (f) Materials in the recycling process, including scale or residue not otherwise exempted, and other equipment containing NORM are exempt from the requirements of this Rule if the maximum radiation exposure level does not exceed 50 microrentgens per hour including the background radiation level at any accessible point.
- (g) Possession of produced waters from crude oil and natural gas production is exempt from the requirements of this Rule if the produced waters are reinjected in a well approved by the Department or if the produced waters are discharged under the authority of the Department.

(5) Radiation Survey Instruments

- (a) Radiation survey instruments used to determine exemptions pursuant to (4)(f) and radiation survey instruments used to make surveys in accordance